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Patent Application for:

PORTABLE MUSIC PLAYER WITH PAY PER PLAY USAGE
AND METHOD FOR PURCHASE OF CREDITS FOR USAGE

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**PORTABLE MUSIC PLAYER WITH PAY PER PLAY USAGE
AND METHOD FOR PURCHASE OF CREDITS FOR USAGE**

CROSS REFERENCE TO RELATED DOCUMENTS

This application claims priority of provisional application serial No. 60/182,400 entitled "Portable Content Player with Pay-Per-Play Usage and Method for Purchase of Credits for Usage", to Jaime Siegel, which is hereby incorporated herein by reference.

FIELD OF THE INVENTION

This invention relates generally to the field of music players. More particularly this invention relates to a music player such as a portable music player which includes a credit card or smart card reader that allows use of recorded media that is playable only in a pay per play format and to a method for a user to purchase credits for use of the music on the portable player.

BACKGROUND

With the advancement of E-Commerce and Electronic Music Distribution (EMD), users will purchase content over the Internet and record the content on media at their remote, or home location. One proposed business model for EMD is "pay per play," whereby a user will only pay for content to the extent that the content is played by the user. While this model may be easy to implement in the home environment, where content playback equipment can be connected through a network that monitors the number of plays, a problem is how to implement "pay per play" in the portable player environment.

For purposes of this document, the term "content" can be interpreted to mean music content, video content, computer software content, computer gaming content and similar types of content which can be downloaded from the Internet. The term "media" or "recording media" or similar terms are intended to encompass tape, disc, magnetic, optical, magneto-optical, silicon and other storage technologies which can be adapted to store digital representations of content.

SUMMARY OF THE INVENTION

The present invention relates generally to pay-per-play electronic content distribution. Objects, advantages and features of the invention will become apparent to those skilled in the art upon consideration of the following detailed description of the invention.

In certain exemplary embodiments, a content playback device includes the ability to accept a media with electronic playback credits, i.e. a smart card, that is pre-loaded with credits. Alternatively, the device may have internal memory that is capable of storing electronic credits. Consequently, when a user plays the content

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1 that is protected so that it may only be played only in a "pay per play" application,
2 credits are deducted from the media that manages the amount of electronic credits
3 available to the user.

4
5 In one embodiment consistent with the present invention, a content player,
6 includes a memory which stores content. A playback credit bank is stored in the
7 content player. A playback circuit plays the content for consumption by a user,
8 providing the credit bank contains at least one playback credit. A processor
9 deducts a playback credit from the playback credit bank when the content is
10 played.

11
12 A method of loading playback credits into an electronic content player
13 according to an embodiment of the invention includes electronically linking with a
14 playback credit vendor using a communication link; purchasing playback credits via
15 the communication link; storing playback credits on a credit storage medium;
16 and transferring the playback credits from the credit storage medium to a playback
17 credit bank residing in the electronic content player.

18
19 Another embodiment of the invention entails an electronic storage medium
20 storing program instructions which, when executed on a programmed processor,
21 carry out a process of: reading a credit bearing medium containing playback
22 credits; transferring playback credits from the credit bearing medium to a playback
23 credit bank; reading a content bearing medium; determining if the playback credit
24 bank has at least one credit; if the playback credit bank has at least one credit,
25 deducting a credit; and if the playback credit bank has at least one credit prior to
26 the deducting, playing back the content stored on the content bearing medium.

27
28 In another exemplary embodiment, a method of playback of electronic
29 media, includes: providing a credit bearing medium embodied as a smart card

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1 having a magnetic strip used as an interface thereto; purchasing playback credits;
2 encrypting the playback credits; storing the encrypted playback credits to the credit
3 bearing medium; reading a credit bearing medium containing playback credits;
4 decrypting the playback credits read from the credit bearing medium transferring
5 the decrypted playback credits from the credit bearing medium to a playback credit
6 bank; reading a content bearing medium, the content bearing medium comprising
7 a Memory StickTM; determining if the playback credit bank has at least one credit,
8 and if so: determining if the content bearing medium is present, and providing a
9 prompt to install the content bearing medium if the content bearing medium is not
10 present, and when the content bearing medium is present: deducting a credit; and
11 playing back the content stored on the content bearing medium; providing a
12 message advising of the lack of playback credits in the event the credit bank does
13 not have at least one playback credit.
14

15 The above examples are intended to illustrate the nature of certain
16 exemplary embodiments and are not intended to be limiting to the scope of the
17 invention.
18

DESCRIPTION OF THE DRAWINGS

19
20
21 The features of the invention believed to be novel are set forth with
22 particularity in the appended claims. The invention itself however, both as to
23 organization and method of operation, together with objects and advantages
24 thereof, may be best understood by reference to the following detailed description
25 of the invention, which describes certain exemplary embodiments of the invention
26 taken in conjunction with the accompanying drawings in which:
27

28 **FIGURE 1** is an embodiment of an exemplary portable media player
29 consistent with the present invention.

1
2 **FIGURE 2** is a flow chart of a method of operation of the exemplary portable
3 media player of **FIGURE 1**.

4
5 **FIGURE 3** is a flow chart of a method of purchasing and loading playback
6 credits in accordance with one exemplary embodiment of the invention.

7
8
9 **DETAILED DESCRIPTION OF THE INVENTION**

10
11 While this invention is susceptible of embodiment in many different forms,
12 there is shown in the drawings and will herein be described in detail specific
13 embodiments, with the understanding that the present disclosure is to be
14 considered as an example of the principles of the invention and not intended to limit
15 the invention to the specific embodiments shown and described. In the description
16 below, like reference numerals are used to describe the same, similar or
17 corresponding parts in the several views of the drawings.

18
19 In accordance with certain embodiments, this invention provides a portable
20 content playback device that includes the ability to accept some form of media with
21 electronic credits, i.e. a smart card, that is preloaded with credits. Alternatively, the
22 device may have internal memory (a playback credit bank) that is capable of storing
23 electronic credits. Consequently, when a user plays the content that is protected
24 so that it may only be played only in a "pay per play" application, credits are
25 deducted or disabled from the media that manages the amount of electronic credits
26 available to the user. Upon use of all of the available credits, the content may or
27 may not disappear depending upon the embodiment. Since it is contemplated that
28 the content will employ use of a copy protection algorithm that prevents copying or
29 permits access only upon payment, the credit media will contain the copy

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1 encryption "key code" for allowing access to the recorded content. The encryption
2 can be accomplished by any known or proprietary encryption technique including
3 public key and private key encryption or any other system known in the art.
4

5 In certain embodiments of methods for purchase of play credits, this
6 invention provides a business model whereby a user can purchase electronic
7 credits, either over the internet or at retail outlets that will be stored on a credit
8 media. The credit media will also have the ability to "unlock" electronic content, for
9 example through the provision of a "key code" that will allow for playback of the
10 content. It is contemplated under one embodiment, that at the time of the purchase
11 or downloading of the electronic content, a user will be able to purchase electronic
12 credits that can be stored on a credit media. When the content is downloaded, the
13 necessary tools for unlocking that content will also be stored on the credit media,
14 thereby allowing for unique copy protection algorithms to be used on each piece
15 of content. When used in combination with a portable content playback device that
16 includes the ability to accept credit media, a user can access "pay per play" content
17 on a portable device.
18

19 An exemplary embodiment of a portable player consistent with the invention
20 is shown as 100 in **FIGURE 1**. Portable media player 100 includes, in this
21 embodiment, a media player 106 which can be any suitable media player including
22 a disc drive, tape drive, flash memory card or Memory Stick™ (Sony Corporation,
23 Tokyo, Japan) reader. In this example, a Memory Stick™ 112 is shown as the
24 content bearing media which contains, for example, digital formatted music
25 program material. Media player 106 includes all of the conventional circuitry
26 required to effect playback of the program material in the media 112 and
27 reproduction thereof over the headphones 120. Alternative media such as tape,
28 disc, magnetic, optical, magneto-optical, silicon technologies such as flash
29 memory and EEPROM memory and other storage technologies which can be

1 adapted to store digital representations of content can also be used without
2 departing from the invention.
3

4 Portable media player 100 also may include a media reader such as a swipe
5 card reader 128 suitable for reading from and writing to a card similar to a credit
6 card or smart card 134 via a magnetic stripe 136 or other interface. In this
7 embodiment, the smart card 134 is programmed with a number of encrypted
8 playback credits which are purchased by the user, for example, by mail or at retail
9 outlets. In other embodiments, the card can be programmed via internet purchases
10 or bypassed altogether as will become clear on consideration of the discussion to
11 follow. In this embodiment, assume that the smart card is purchased with playback
12 credits, e.g. 100 credits. When the user purchases the playback credits on the
13 smart card 134, he or she swipes the card through swipe card reader 128 to read
14 the content of the smart card 134, decrypt the content in a processor 144 having
15 a decryption engine, deleting or deducting the credits from the smart card 134 and
16 storing those credits internally in the portable media player's playback credit bank
17 156. Thus, in this example, after swiping the smart card 134 through the swipe
18 card reader 128, the playback credit bank 156 is credited with the 100 playback
19 credits previously stored thereon, so that the playback credit bank 156 now has 100
20 credits plus any credits already stored in the playback credit bank 156. The
21 playback credit bank 156 is preferably a Flash memory or EEPROM device or other
22 non-volatile memory device that can be protected and which can be written to and
23 read numerous times. Those skilled in the art will appreciate that processor 144
24 may be embodied as a microprocessor or microcontroller having associated RAM
25 and ROM operating memory storing program steps suitable for carrying out the
26 operational functions described herein.
27

28 In other embodiments the playback credit bank 156 can be replenished from
29 any number of sources. For example, the same media player which plays content

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1 may be employed to read the credits from credit bearing media instead of, or in
2 addition to, content that might or might not be stored on the credit media. In this
3 embodiment, media could be sold with a certain number of initial play credits. In
4 other embodiments, the portable media player 100 could be directly interfaced to
5 either a point of sale terminal or a computer connected to the Internet or to a
6 wireless communication mechanism (e.g. Bluetooth) so that the playback credit
7 bank can be directly replenished from an Internet or other electronic transaction.
8 Other variations will occur to those skilled in the art without departing from the
9 present invention.
10

11 In operation, once the playback credits are stored in the playback credit bank
12 156 and content bearing media 112 is accessed by the media player 106, the
13 processor 144 checks the playback credit bank 156 prior to enabling playback of
14 the media's content. If credits are available, one is deducted or disabled and
15 playback is permitted. In one embodiment, the credit is deducted at approximately
16 the time when playback begins. In other embodiments, the credit can be deducted
17 only after, for example, ten seconds or 30 seconds of playback have been provided
18 (e.g. as a free preview). In some embodiments, a mechanism such as display 160
19 is provided and the programming generates a reminder as to the status of the credit
20 bank or otherwise provides a reminder the user to renew credits. This can be
21 accomplished, for example by providing a visual or audible message to the user
22 indicating the number of playback credits remaining and/or a need to obtain new
23 credits.
24

25 In another embodiment of the invention, the content bearing media 112 can
26 also serve as the storage mechanism for the playback credit bank. That is, in this
27 embodiment, the content bearing media 112 (such as a Memory Stick™) should be
28 capable of being written to by the media player 106 and the media player 106
29 should have the ability to write to the content bearing media 112. In this manner,

1 the content and playback credits are associated with the media rather than the
2 player 100 permitting the media to be used for its available credits in any suitable
3 player 100 including multiple such players.
4

5 Referring now to **FIGURE 2**, a process 200 for storing and using playback
6 credits is shown starting at 202. If content bearing media is present at 226 and the
7 user attempts to play the content, the media bearing the content is read at 232 and
8 the processor 144 checks the playback credit bank 156 at 240 to determine if
9 playback credits are available. If no content bearing media is present at 226, a
10 message is displayed to insert the content media at 230 and control passes to 274
11 as will be discussed later. In certain embodiments, there may be several different
12 types of playback credits which are applicable to different types of content, so it
13 might be necessary to read the content of the media prior to determining that there
14 are credits available at 240.
15

16 In other embodiments, only a single playback credit is used and 232 may be
17 omitted at this stage. If there is at least one credit of the proper type at 246 the
18 content can be played, but if not, control passes to 250 where the user is provided
19 with an error message or other indication that there are no credits and control
20 passes to 274 to await addition of new credits. If there is at least one credit at 246,
21 a credit is deducted at 258 and the media player is enabled at 266 to play the
22 content. If no credit media is present at 274 and credits are equal to zero at 282,
23 the process returns to 250 where the user is presented with a message indicating
24 a lack of playback credits and the process cycles through the loop of 250, 274 and
25 282 until playback credits are replenished by, e.g. swiping a credit card or smart
26 card through the swipe card reader 128. If credits are not equal to zero at 282 by
27 virtue of new credits being stored, control returns to 226 to await presence of the
28 content media.
29

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1 As previously discussed, in other embodiments, the credit may not be
2 deducted until after the playback is enabled so the order of 258 and 266 can be
3 changed with delays interposed without departing from the present invention. If at
4 274, a credit bearing media is present, the media is read at 278 and the credits are
5 registered with the playback bank. The registration may cause the credits to be
6 removed from the credit bearing media. These credits are decrypted and stored at
7 280 in the playback credit bank 156 and control returns to 227 to await the
8 presence of content media. Alternatively, decryption may only occur upon a
9 request to playback the content.

10
11 Credits may be purchased in any number of ways. For example, credits may
12 be purchased at retail establishments or over the internet. **FIGURE 3** illustrates a
13 process 300 for purchasing credits over the Internet. In this embodiment, a user
14 logs on to a credit vendor's site at 306 and purchases playback credits via a credit
15 card transaction or using some form of electronic cash. Credits can then be
16 downloaded to a file which can only be successfully executed one time. That file
17 is then loaded onto the credit bearing medium such as a smart card or Memory
18 Stick™ at 332. The file is then transferred to the portable media player at 350 in
19 the manner previously described. This file is executed in the portable media player
20 100 by processor 144 which decrypts the number of credits and loads the credits
21 into the playback credit bank 156. In variations of this process the steps shown
22 with a * may be omitted, such as for purchase at a retail site (where 306 is
23 unnecessary) or where the portable media player 100 is loaded directly with the file
24 without use of a smart card or the like as an intermediary (where 332 is
25 unnecessary). The device itself may alternatively be connected via USB (Universal
26 Serial Bus) wireless link (e.g. Bluetooth) or other appropriate interface to add
27 credits.

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1 In a variation of the present invention, decryption could occur only after
2 stored in playback credit bank so that at no time is it possible to read decrypted
3 data stored either in the media or the playback credit bank.
4

5 Many equivalent variations of the present invention are possible. By way of
6 example, the content and playback credits can be stored on the same electronic
7 medium. The content and credits can be obtained from the Internet, kiosks, or any
8 suitable vending. Credits stored on a "Bluetooth" or other wireless network enabled
9 storage medium (with or without content) can be registered as belonging to a
10 particular user and programmed to automatically deduct playback credits whenever
11 they are low and in presence of an appropriately compatible Bluetooth or other
12 wireless device. Many other variations of this invention will occur to those skilled
13 in the art upon consideration of the present invention. Although the present
14 invention was inspired by the difficulty in implementing pay per play in a portable
15 music player, the invention should not be considered limited to a portable player
16 environment since the methods and apparatus disclosed here could equally well
17 be applied to a home or commercial audio system, without limitation.
18

19 Those skilled in the art will recognize that the present invention has been
20 described in terms of exemplary embodiments based upon use of a programmed
21 processor. However, the invention should not be so limited, since the present
22 invention could be implemented using hardware component equivalents such as
23 special purpose hardware and/or dedicated processors which are equivalents to
24 the invention as described and claimed. Similarly, general purpose computers,
25 microprocessor based computers, micro-controllers, optical computers, analog
26 computers, dedicated processors and/or dedicated hard wired logic may be used
27 to construct alternative equivalent embodiments of the present invention.
28

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1 Those skilled in the art will appreciate that the program steps used to
2 implement the embodiments described above can be implemented using disc
3 storage as well as other forms of storage including Read Only Memory (ROM)
4 devices, Random Access Memory (RAM) devices; optical storage elements,
5 magnetic storage elements, magneto-optical storage elements, flash memory, core
6 memory and/or other equivalent storage technologies without departing from the
7 present invention. Such alternative storage devices should be considered
8 equivalents.
9

10 While the invention has been described in conjunction with specific
11 embodiments, it is evident that many alternatives, modifications, permutations and
12 variations will become apparent to those skilled in the art in light of the foregoing
13 description. Accordingly, it is intended that the present invention embrace all such
14 alternatives, modifications and variations as fall within the scope of the appended
15 claims.
16

17 What is claimed is:
18